

# **ABSTRACT**

1       A data storage device that includes an array of resistive memory cells. The  
2 resistive memory cells may include a magnetic tunnel junction (MTJ) and a thin-film  
3 diode. The device may include a circuit that is electrically connected to the array and that  
4 is also capable of monitoring a signal current flowing through a selected memory cell.  
5 Once the signal current has been monitored, the circuit is capable of comparing the signal  
6 current to an average reference current in order to determine which of a first resistance  
7 state and a second resistance state the selected memory cell is in. Also, a method for  
8 operating the data storage device.